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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,394	12/19/2001	Adityo Prakash	10006.000610	5415

31894 7590 01/22/2010
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EXAMINER	
ROSARIO, DENNIS	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
01/22/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/032,394	Applicant(s) PRAKASH ET AL.	
	Examiner DENNIS ROSARIO	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 30 September 2009.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 2-4,6-10,15-20 and 23-42 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 2-4,6-10,15-20 and 23-42 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 28 February 2002 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment was received on 9/30/09. Claims 2-4,6-10,15-20 and 23-42 are pending.

Response to Arguments

2. Applicant's arguments, see remarks on page 9, last paragraph, 1st sentence, filed 9/30/09, with respect to the rejection(s) of claim(s) 2-4,6-10,15-20 and 23-42 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Shen et al. (US Patent 6,718,066).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-4,6-10,15-20 and 23-42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2, line 8 has "combined domain and pattern adaptive transform" that does not clearly describe what is being combined. As originally interpreted, the domain and pattern are combined that are applied to one transform. Upon further review of the remarks of 9/30/09 on pages 9 and 10, the applicant suggests that two transforms are combined; however, such a feature is not claimed since the claims require the "combined domain and pattern adaptive transform" where the transform is singular and

not transform**s (emphasis added)**. The original interpretation will be applied, since interpreting the combined domain and pattern adaptive transform as two transforms is an improper incorporation of the specification or remarks into the claims.

Thus, remaining claims are rejected for the same reasons as claim 2.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2,6,7,9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052).

Regarding claim 2, Boon teaches a method of processing all or a portion of a multi-dimensional signal with a domain composed of a collection of arbitrarily shaped domains via a multi-scale transform comprising the steps of:

a. Obtaining a multi-dimensional digital image frame (“frame” in col. 26, lines 19-26);

b. Breaking (“divided” in col. 15 ibid. as shown in fig .2) the image frame into constituent arbitrary shaped domains (“arbitrary shaped image” ibid. as shown in fig. 2), or given such a set, that cover all or a portion of the original multidimensional signal domain (as shown in fig. 2); and

c. Performing a combined (given that at least one of the following items in Boon is used with another corresponds with the claimed combined) domain ("frequency-domain data to space-domain data" in col. 17, lines 2-8 that is a common feature of the DCT in embodiments 1 and 5) and pattern ("texture signal" in col. 26, lines 37-47 is not clearly the claimed pattern) adaptive transform ("shape-adaptive DCT" in col. 19, lines 51-53 that is applied in embodiment 1 is applied to embodiment 5, too since the 5th embodiment uses "a DCT unit…of the first embodiment" in col. 27, lines 9-12) on one or more of the collection of arbitrary shaped domains, wherein filter ("low-pass filter" in col. 28, line 66 to col. 29, line 5) comprising a convolution operator (not taught) is applied to process pixels ("pixels" in col. 28, lines 62-66) near a boundary ("texture signal" in col. 28, line 66 to col. 29, line 5 as shown in fig. 2:802 that is near the claimed boundary of an object) of the domain, and wherein filter coefficients (not taught) for an interpolation filter are scaled by an inverse of a gradient value.

Biwas teaches the claimed filter coefficients ("weighting coefficients" on page 497, left column, bottom paragraph, 2nd sentence corresponding to "weights" in page 498, left column, section 2, 2nd paragraph, last sentence) for an interpolation (corresponding to "averaging" in page 498, section 2, 1st sentence) filter ("algorithm" ibid. is not clearly a filter, but given that it removes "noise" in section 2, second sentence like a filter, the algorithm functions as a filter; thus, the algorithm is a filter) are scaled (as shown in fig. 1) by an inverse of a gradient value ("inverse…gradient" in section 3, 1st sentence).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon's teaching of "smoothes the pixel values" in col. 18, lines 30-32 with Biwas's smoothing algorithm, because Biwas's "Smoothing is an important image processing oper-ation" in section 1, 1st sentence.

The combination does not teach the claimed pattern and convolution operation.

Otsuka et al. teaches "pictorial images having inherent periodic patterns…such as textures" in col. 1, lines 16-23.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to equate the textures of Boon's images to the patterns of Otsuka, since Otsuka teaches that images inherently have patterns such as textures.

The combination does not teach the claimed convolution.

Tinkler teaches a "convolution operator is a circuit which low pass filters" in col. 3, lines 18-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon's lowpass filter with Tinkler's convolution operator, because Tinkler's operator can properly handle a "high data rate" in col. 3, lines 20-24 that is "required" in col. 1, lines 38-41.

Regarding claim 6, Biswas teaches method of claim 2, wherein the interpolation filter (said algorithm) comprises a set ("set" in section 2, 3rd paragraph, 1st sentence upon which the weights are applied) of the filter coefficients (said weights).

Regarding claim 7, Biswas teaches the method of claim 6, wherein the gradient value is computed for each filter coefficient from a center (as shown in fig. 1's vertical axis) of the set of filter coefficients.

Regarding claim 9, Boon teaches the method of claim 2, further comprising encoding (fig. 7:534) quantized values (output of fig. 7:500d that corresponds to fig. 1:100a:Q) and placing the encoded data onto a storage apparatus (implied by "store" in col. 1, lines 16-18) or mechanism for the purpose of efficient storage and later decoding.

Regarding claim 17, Boon teaches the method as in any one of claims 2 or 6 where the multi-dimensional image frame is a residue frame (upon the output of fig. 7:502) for a sequence of video images.

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 2 above, further in view of Jeong (US Patent 6,393,060).

Claim 3 is rejected the same as claim 2. Thus, argument presented in claim 2 is equally applicable to claim 3 except for the additional limitation of:

c. Quantizing (fig. 2:Q) resultant decomposition coefficients (figs. 3-5); and

d. Encoding (fig. 2:103) and transmitting (fig. 2:104) quantized values (fig. 2:202' output) over an information channel (fig. 2:104) to a decoder ("to a decoder" in col. 10, lines 15-18) for reconstruction of an approximated signal.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon's DCT with Jeong's DCT, because Jeong's DCT provides "better image quality than...H.263" in col. 6, lines 17-20.

Claim 4 is rejected the same as claims 2 and 3. Thus, argument presented in claims 2 and 3 is equally applicable to claim 4.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 7 above, further in view of Richards et al. (US Patent 4,802,110).

Regarding claim 8, the combination does not teach the claimed 4X4 set.

Richards teaches the 4X4 set as shown in fig. 4:A(1,1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boons video signals with Richards' teaching of video signals to provide an image without "aliasing" in col. 9, lines 48-54.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 2 above, further in view of Lei et al. (US Patent 6,356,665 B1).

Regarding claim 10, the combination does not teach claim 10.

Lei teaches the claimed resultant decomposition coefficients as shown in fig. 6A with “bit plane encoding” in the abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon’s DCT with Lei fig. 1:12 that outputs the decomposition of fig. 6A with the plane encoding, because Lei's encoding provides an "advantage" in col. 4, lines 18,19.

10. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 2 above, further in view of Gonzales et al. (US Patent 5,001,559).

Regarding claim 15, the combination does not teach the claimed still image frame.

Gonzales teaches the still image frame as “still frame” in the abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon’s compression of video with Gonzales’ teaching of compression of video that is applied to still frames to obtain a still image with improved “quality" in the abstract.

Regarding claim 16, the combination does not teach the claimed infra-frame.

Gonzales teaches the “intra-frame” in the abstract that is interchangeable with infra-frame.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon with Gonzales for the same reasons as claim 15.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Salembier et al. (Segmentation-Based Video Coding System Allowing the Manipulation of Objects).

Regarding claim 18, the combination does not teach claim 18.

Salembier teaches where the combined domain and pattern adaptive transform (corresponding to fig. 1:Texture coding) is applied during the calculation of coarser scale representations (fig. 1:Parition Functions that include “coarser partitions” in page 62, left column, 1st full paragraph, 6th sentence) in a forward transform (“DCT” in page 69, right column, 1st full paragraph, 1st sentence) of a multi-scale (“multiscale” in page 65, left column, lines 3-5 as shown in fig. 5 as “Partition Tree") transform (corresponding to fig. 5: ”Set of coding techniques” that includes said DCT).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon’s teaching of DCT with Salmbier’s teaching of DCT, because Salmbier’s teaching of DCT gives “the best compromise in the rate-distortion sense” in page 69, right column, lines 4-6.

12. Claims 19,23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL

IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures) and Bottou et al. (US Patent 6,587,588 B1).

Regarding claim 19, the combination does not teach claim 19.

Egger teaches the combined domain and pattern adaptive transform (corresponding to “Shape-Adaptive DCT” on page 985, section C. and “Shape-Adaptive Wavelet Transform” on page 986, section D2)) is applied during the estimation of next finer scale representations in an inverse transform of a multi-scale transform during the reconstruction phase (corresponding to “progressive transmission" in page 991, section E1), 1st sentence) either in conjunction with or irrespective of the use of the method in claim 18.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon’s teaching of "sub-band coding, or wavelet coding" in col. 19, lines 51-53 with Egger's teaching of shape adaptive transforms with progressive transmission, because the transmission “saves transmission time” in page 977, left column, 1st full paragraph, 1st sentence.

The combination does not clearly teach the claimed next finer scale representations in an inverse transform of a multi-scale transform.

Bottou teaches the claimed next finer scale representations (“finer scales” in col. 12, last sentence) in an inverse transform (“inverse transform” ibid.) of a multi-scale

(implied by said finer scales) transform (said inverse transform that is applied to the finer scales).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Egger's teaching of progressive transmission with Bottou's transmission, because Bottou's transmission “achieves reduced memory storage requirements” in col. 2, lines 42-46.

Claim 23 is rejected the same as claim 19. Thus, argument presented in claim 19 is equally applicable to claim 23.

Regarding claim 24, Boon teaches the methods of claims 19 or 23 where the domain adaptive transform (fig. 1(b):104) is applied either with(as shown in fig. 1(b)) or without the presence of quantization (fig. 1:105) or bit-plane pruning.

13. Claims 20,25,26,27,28,29,30,33,34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures).

Regarding claim 20, the combination does not teach claim 20.

Edgar teaches the combined domain and pattern adaptive transform (corresponding to “Shape-Adaptive DCT” on page 985, section C. and “Shape-Adaptive Wavelet Transform” on page 986, section D2)) is applied in order to construct a sub-band decomposition (via said wavelet as shown in fig. 3) of a multi-scale (implied by

“subbands are…scaled” on page 986, left column, last sentence) transform (“Shape-Adaptive Wavelet Transform [SAWT]” on page 986, section D2) that forms the subbands).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon’s teaching of "sub-band coding, or wavelet coding" in col. 19, lines 51-53 with Egger’s teaching of SAWT, because the SAWT meets the demands of “New applications in a multiresolution environment” in page 984, left column, section V.A., 1st sentence.

Regarding claim 25, the combination does not teach claim 25.

Egger teaches the domain adaptive transform (corresponding to “Shape-Adaptive DCT” on page 985, section C. and “Shape-Adaptive Wavelet Transform” on page 986, section D2)) is applied such that the points (as shown in fig. 15) external to the arbitrary domain (the grey points in fig. 15) but within support of a filter (or filters) (as shown in fig. 15 as a filter bank) are excluded (“not processed” in the description of fig. 15) from a mathematical result of a convolution (“convolution” on page 983, left column, 1st line) or weighted average / difference.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon with Egger for the same reasons as claim 20.

Regarding claim 26, the combination does not teach claim 26.

Egger teaches the domain adaptive transform is applied such that points external to the arbitrarily shaped domain (said gray points) but within support of the filter (or filters) (said bank) are included in a mathematical result (implied by “multiplied” in page

986, right column, 1st full paragraph, 4th sentence) of a convolution (said convolution) or weighted average / difference but are further multiplied (said multiplied) (or re-weighted) by another set of weighting factors (implied by “Set of band-pass filters” in page 979, section IV.A. 2nd sentence).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon with Egger for the same reasons as claim 20.

Regarding claim 27, Egger teaches the method of claim 26 where the set of additional multiplicative factors (implied by the set of filters) is determined as a result of calculation (“√2” in page 986, right column, 1st full paragraph, 7th sentence) of a local measure (”Image Quality Measure” on page 1002, section X.B.2)) characterizing a transition at a boundary (as shown in fig. 43(a)) of the arbitrary domain.

Regarding claim 28, Egger teaches the method of claim 27 where the measure is based on a statistical function (implied by “statistics” on page 986, right column, 1st full paragraph, 5th sentence) of a plurality of pixel value differences (as shown in fig. 15 as the grey and black points) across the boundary transition (corresponding to fig. 43(a)).

Regarding claim 29, Egger teaches the method of claim 28 where the statistical function is the mean (“mean-square distortion” in page 978, section III.A. 3rd sentence).

Regarding claim 30, Egger teaches the method of claim 28 where the statistical function is the median (“median sample” on page 983, left column, last line).

Regarding claim 33, Egger teaches the method of claim 28 where the statistical function (“statistical distribution” on page 996, section B., 2nd paragraph, 2nd sentence)

is a pre-determined constant (implied by “long bursts of the same symbol” on pagr 996, section B., 3rd paragraph,2nd sentence).

Regarding claim 34, Egger teaches the method of claim 26 where the set of additional multiplicative factors (implied by the set of filters) is determined as a result of calculation (said (“√2”) of a local measure (”Image Quality Measure” on page 1002, section X.B.2)) characterizing a transition at the boundary of the arbitrarily shaped domain (as shown in fig. 43(a)) and the calculation of the local measure is dependent on data (implied by said “√2”) which is available (given that “√2” is a feature of lowpass filters) to a decoder (implied by “decoding” on page 980, left column, 2nd paragraph, last sentence that has the lowpass filter in the form of an inverse filter bank that has a lowpass filter and hence “√2”) at the time of an operation when envisioned as part of an inverse transform or reconstruction phase of a multi-scale transform; or

Regarding claim 34, Egger teaches the method of claim 26 where the set of additional multiplicative factors (implied by the set of filters) is determined as a result of calculation of a local measure (”Image Quality Measure” on page 1002, section X.B.2)) characterizing a transition at the boundary of the arbitrarily shaped domain (as shown in fig. 43(a)) and the calculation of the local measure is dependent on data (of an image) which is available to a decoder (implied by “decoding” on page 980, left column, 2nd paragraph, last sentence) at the time of an operation when envisioned as part of an inverse transform or reconstruction phase of a multi-scale transform.

Regarding claim 35, Egger teaches the method of claim 34 where the calculation of the local measure (said quality measure) is based on one or more coarser

(corresponding to “coarser partitioning” on page 981, right column, section 2), 5th sentence) scales (implied by “downscaled” on page 988, section E.,2nd paragraph, 2nd sentence) of representation of the signal which have already been decoded (or “reconstructed” in page 1002, section A.B.2), 2nd paragraph, 3rd sentence) and thus made known to the decoder by the time of the inverse transform step.

14. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures), as applied to claim 28 above, further in view of Sharma et al. (US Patent 6,385,329).

Regarding claim 31, the combination does not teach claim 31.

Sharma teaches the statistical function (“weighted average” in col. 40, lines 62-64) is based on a weighted average (“weighted average” in col. 39, lines 34-38).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon’s wavelet as modified with Egger wavelet with Sharma’s wavelet, because Sharma’s wavelet is used for applications "such as copy protection or authentication” in col. 3, lines 63-65.

Claim 32 is rejected the same as claim 31. Thus, argument presented in claim 31 is equally applicable to claim 32 except for the additional limitation of as taught in Sharma of coefficients (“wavelet coefficient” in col. 34, lines 38-41) that are nonlinear

functions ("function may be non-linear, such as adjusting a…set of coefficients" ibid.) of pixel values.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon's wavelet as modified with Egger wavelet with Sharma's wavelet for the same reasons as claim 31.

15. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures), as applied to claim 34 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures).

Regarding claim 36, Egger teaches the method of claim 34 where the calculation of the local measure (said quality measure) is based on a motion compensated model frame (or equivalent) (implied by "intracoding mode is a still image" in page 1001, section IX.D., 2nd sentence does not form the basis for the quality measure) that has already been decoded and thus made known to the decoder by the time of the inverse transform step in the context of a encoder-decoder system related to the efficient transmission or storage of a sequence of video data.

Egger teaches using the quality measure for still images that are not from MPEG-4.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Egger quality measure for still images with the still images of MPEG-4, because the measure is "most sued in practice because of its simplicity" on page 1002, section X.B.2), 2nd paragraph, 2nd sentence.

16. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures), as applied to claim 25 above, further in view of Decegama (WO 98/28917).

Regarding claim 37, the combination does not teach claim 37.

Decegama teaches renormalization (given that fig. 1:11 is a normal state upon which is renormalized in fig. 1:19) by replacement (via “estimates” in the abstract) of missing filter coefficients (“missing…coefficients” in the abstract), using a statistical function (“arbitrary function f” on page 11, lines 34,35 in “sampled form” in page 12, lines 23,24 where the implied samples corresponds to the claimed and implied statistics) of remaining pixel values (corresponding to said remainder of the missing coefficients of pixels) which are located at points contained within the arbitrary shaped domain (not taught).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boon’s wavelet compression of arbitrarily shaped images

with Decegama's teaching of compression of wavelets, because Decegama's compression "generates a faithful reproduction of the original image" on page 6, lines 24-26.

17. Claims 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures), as applied to claim 25 above, further in view of Decegama (WO 98/28917), as applied to claim 37 above, further in view of Hong et al. (US Patent 5,842,156).

Regarding claim 40, the combination does not teach claim 40.

Hong teaches the claimed "weighted average" in col. 9, lines 25-28.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Decegama's teaching of combining wavelets with a function as discussed on page 11, lines 33,35 with Hong's teaching of combining wavelets with the average, because Hong's teaching of the average is used in a specific application of tracking.

Claims 38 and 39 are rejected the same as claim 40. Thus, argument presented in claim 40 is equally applicable to claims 38,39.

18. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING

THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures), as applied to claim 25 above, further in view of Decegama (WO 98/28917), as applied to claim 37 above, further in view of Sharma et al. (US Patent 6,385,329 B1).

The combination does not teach the claimed coefficients.

Sharma teach the coefficients as discussed in claim 32 above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Decegama's combination of a wavelet with an arbitrary function with Sharma’s teaching of combining results of a subband wavelet to form the weighted average for the same reasons as claim 32, above.

19. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boon (US Patent 6,233,279) in view of Biswas (SMOOTHING OF DIGITAL IMAGES USING THE CONCEPT OF DIFFUSION PROCESS) and Otsuka et al. (US Patent 4,538,184) and Tinkler et al. (US Patent 6,007,052), as applied to claim 6 above, further in view of Egger et al. (High-Performance Compression of Visual Information-A Tutorial Review-Part I: Still Pictures), as applied to claim 25 above, further in view of Decegama (WO 98/28917), as applied to claim 37 above, further in view of Iu (US Patent 5,361,105).

Regarding claim 42, the combination does not teach claim 42.

Iu teaches some form of outlier rejection (fig. 2:40) is used to ensure that outliers remaining inside the intersection of the domain and the filter support (corresponding to

fig. 2:60) do not disrupt the local accuracy or efficiency of the transform (corresponding to fig. 1:DCT).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Boons' fig. 1(b) with Iu's fig.1:100, because Iu's fig. 1:100 removes noise.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Guillemot (Time-invariant and time-varying multirate filter banks: application to image coding) is pertinent as teaching different types of adaptive transforms.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS ROSARIO whose telephone number is (571)272-7397. The examiner can normally be reached on 9-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571)272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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